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10/554,042

10/20/2005

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08/01/2008

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EXAMINER

ODOM, CURTIS B

ART UNIT

PAPER NUMBER

2611

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/554,042 | Applicant(s) BILCU ET AL. | |
| | Examiner CURTIS B. ODOM | Art Unit 2611 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7-9,11,13 and 14 is/are rejected.
- 7) ☒ Claim(s) 3,5,6,10 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☒ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 6 is objected to because of the following informalities: In claim 6, the variables $W^t(n)$, $X(n)$, $d(n)$, $z(n)$, $F\{\}$, and q are suggested to be defined. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, 7-9, 11, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Bliss et al. (U. S. Patent No. 5, 966, 415).

Regarding claim 1, AAPA discloses a method (see instant specification) for filtering (see Fig. 1) comprising adaptive filtering $W(n)$ an input signal (see page 3, lines 19-30), interpolating (l) a filtered signal by recreating removed samples (see page 3, lines 19-30), interpolating (l) the input signal, $x(n)$, by recreating removed samples (see page 3, lines 19-30) for adapting the

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adaptive filtering through LMS as shown in Fig. 1 and described on page 3, line 27-page 6, line 14.

AAPA does not disclose adapting properties of an interpolation of the filtered signal. However, Bliss discloses interpolating (see Fig. 4B, block 136) a filtered signal. Furthermore, Bliss et al. discloses adapting interpolation (see Fig. 4B) based on τ_s using a phase offset (see column 8 lines 19-51), wherein coefficients of the interpolator are adjusted by minimizing an error (see column 11, lines 33-43). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the method of the Applicant's Admitted Prior Art with the teachings of Bliss et al. since Bliss et al. states interpolation synchronizes data with baud rate (see column 13, lines 1-3).

Regarding claim 2, AAPA discloses (see Fig. 1) providing a reference signal $d(n)$ and combining the reference signal with an interpolated filtered signal $y_I(n)$ for forming an error signal $e(n)$, see also page 4, lines 5-24.

Regarding claim 4, Bliss et al. discloses adapting interpolation (see Fig. 4B) based on τ_s using a phase offset (see column 8 lines 19-51), wherein coefficients of the interpolator are adjusted by minimizing an error (see column 11, lines 33-43). It would have been obvious to include this feature since Bliss et al. states interpolation synchronizes data with baud rate (see column 13, lines 1-3).

Regarding claim 7, AAPA discloses using FIR filtering for adaptive filtering (see page 3, lines 19-30).

Regarding claim 8, the claimed apparatus includes features corresponding to the above rejection of claim 1, which is applicable hereto.

Regarding claim 9, the claimed apparatus includes features corresponding to the above rejection of claim 2, which is applicable hereto.

Regarding claim 11, the claimed apparatus includes features corresponding to the above rejection of claim 4, which is applicable hereto.

Regarding claim 13, AAPA discloses an adapting block (LMS) for adapting the properties of the adaptive filter, see also page 3, line 27-page 6, line 14.

Regarding claim 14, the claimed apparatus includes features corresponding to the above rejection of claim 7, which is applicable hereto.

Allowable Subject Matter

4. Claims 3, 5, 6, 10, and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form (and above objections are overcome) including all of the limitations of the base claim and any intervening claims.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CURTIS B. ODOM whose telephone number is (571)272-3046. The examiner can normally be reached on Monday- Friday, 9-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Curtis B. Odom/
Primary Examiner, Art Unit 2611
July 30, 2008